

REMARKS

Counsel for applicants thanks Examiner Levy for the kindness shown during the interview of 28 July 2005, wherein the importance of the present invention and its surprising benefits over prior art combustible substance delivery devices were discussed. For example, prior art mosquito coils are heavy, and suffer from frequent breakage and uneven burn rates. The adverse health consequences of inadequate protection from flying pests are well documented, and the present invention will reduce the costs and difficulties associated with dispensing insecticides in remote locations.

In view of the Examiner's comments and suggestions, Claims 1, 10-13, 20, 21 and 35 have been further amended (1) to recite that that devices of the present invention and devices produced by the methods of the present inventions deliver the recited substance via combustion, (2) to recite a density range and (3) to recite a thickness range. It is believed these amendments place the claims in condition for allowance as the recited inventions are neither taught or suggested by the prior art. Further, the devices of the present inventions have been shown to be surprisingly effective in producing lightweight and flexible (or less brittle) delivery devices that have improved burn rate consistency for delivery of substances such as insecticides and have the other advantages pointed out in the application. Claims 1-21 and 26-35 are pending, and allowance is respectfully requested.

The claims, prior to amendment, were rejected as obvious over various combinations of U.S. Patent No. 5,447,713 ("Eisner"), No. 2,224,622 ("Waples"), No. 3,767,785 ("Bordenca"), and/or GB 2139498 ("Kuan"). The cited documents do not disclose a combustible paperboard strip useful as a substance delivery device for a substance toxic to insects and/or a perfume. In fact, Bordenca teaches away from the present invention as insecticides are added to boxes to prevent destruction of the boxes, whereas the claims, as amended, specifically recite that the active "substance can be delivered by combustion, which will destroy the device in the process of delivering the substance." The materials used in Kuan, Eisner and Waples are formed by a different process and have different properties from the paperboard recited.

Attention is respectfully directed to Figures 3 and 5 that are part of the application as filed. Additional copies are attached hereto to facilitate review. Note that in Figure 5,

burn rate remains relatively stable over a considerable range of densities, although at higher or lower densities burn rate is either too fast or the strip cannot maintain self-combustion. However, with reference to Figure 3, depending on the density, burn rate will rapidly increase or decrease with changes in thickness. The inventor surprisingly found that lightweight strips of paperboard can be made with a density and thickness to have superior mechanical characteristics (e.g., less breakage), more consistent and predictable burn rates, and improved shipping and storage characteristics (lighter weight means they can be shipped greater distances, among other things).

In contrast, the other cited art does not teach or suggest the inventions recited and it is respectfully requested that the present claims be allowed for reasons of record and as further set forth herein.

Eisner discloses the use of a woodchip and binder combination or pressed wood fibers, which leads to a fibreboard product that is very different in properties from the paperboard recited in the claims. As can be seen by the previously-submitted definition of and literature regarding medium-density fibreboard, it is an engineered wood product, which is formed of adhesives and wood strands, fibers or veneers. It does not have the properties of paperboard recited in the present claims, and the process used to form Eisner's fibreboard cannot produce paperboard.

Waples discloses a mixture of resins with a vegetable fiber, wood pulp or paper. Resin bound delivery devices tend to "dust" when small particles break off during handling. Paperboard is much more flexible than the resin board formed by Waples, as the present invention does not require a resin adhesive. In contrast to Waples' frangible product that can dust, the paperboard of the present invention is formed by felting fibers from solution and drying the resulting interlocked fiber mesh. This results in a flexible material of a uniform consistency, which can be readily distinguished from other products by visual inspection.


Kuan's strip is formed of a "filler" made of charcoal as the primary ingredient, to which is added wood powder and starch. Kuan's ingredients are combined to form a paste and deposited onto a paper backing, page 1, lines 38-99. Kuan requires a backing sheet because the filler is frangible and does not have the strength and flexibility of the paperboard of the present invention. The paperboard used in the

present invention has very different properties than Kuan's filler, and is formed by a different process, specifically felting of fibers from a solution as recited. Pages 1 and 2 of the present specification outline how paperboard is very different from materials used by Kuan, and the other cited art. In contrast to Kuan, the use of paperboard in the present invention leads to substantial improvements in performance over prior art substance delivery devices. Hence, Kuan and the prior art do not teach or suggest the use of paperboard formed by felting fibres from solution for a combustible substance delivery device, such as a combustible insect repellent delivery device.

The present inventions provide non-obvious solutions to problems that have confronted the insect repellent industry for many years, specifically insect repellent coil breakage due to overly brittle compositions and unpredictable or undesirable burn rates. It is respectfully noted that an estimated 100 million mosquito coils are sold worldwide each year, predominantly in third world countries with poor distribution networks. This makes product performance critical for remotely-manufactured products as returns are difficult or impossible. Further, use of these products is critical to reducing insect-borne diseases in many impoverished areas, where cost of manufacture and delivery must be minimized. A plethora of local manufacturing facilities leads to increased costs due to loss of economies of scale; these costs can be reduced with the present invention. In view of the long felt but unsolved need for an improved insect repellent strip and, in general an improved combustible substance delivery device, it is respectfully submitted that the present invention is not obvious over the cited art taken alone or in combination with the prior art.

If there are any issues that the Examiner would like to discuss prior to issuing a Notice of Allowance, please telephone the undersigned at 408-294-6750 to expedite allowance.

Respectfully submitted,


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